

## FIELD OF THE INVENTION

The present invention is in related to an adjustable cup-holder, which is able to hold different types of cups.

## BACKGROUND OF THE INVENTION

The prior cup-holders are the types of a glass cup with a handle or a two-layer cup with stainless steel material; on the other hand, a cap can be utilized to contain a cup, but the cap is installed a handle and a pad for protecting that a table surface being not damaged by hot drink in the cup; further that, a fixing structure is designed on either the table or the cup for holding. The cup-holders or the cap are not adjustable and are only for specific cups, but there are many different types of cups with for example, dimensions, figures, etc.

Besides, due to the costs of materials as glass, paper, two-layer stainless steel, and cleaning, etc., and most of cups have no handles, pads, and fixing structures, therefore other suitable materials are needed to easily and efficiently produce such components on cups. Again, as aforesaid, there are sorts of cups, so the components to fit cups may not be possible. Hence an adjustable cup-holder with a handle, a pad, a fixing structure, etc. may be a need for fitting different types of cups.

## SUMMARY OF THE INVENTION

The primary objective of the present invention is to provide an adjustable cup-holder for a wide range of application to versatile cups. The

cup-holder has a handle and is made of plastic, alloy, metals, etc. It is then that the cup-holder is manufactured with low technology and low cost, and thus a pad, a fixing structure, etc. can be made as well. The paper cup or the glass cup contained in the cup-holder is either replaced or cleaned.

According to the present invention, the cup-holder comprises a bottom; a handle, which lower end connects the bottom; and a horizontally flexible ring; wherein, the flexible ring connects an upper end of the handle for containing different dimensions of cups.

According to the present invention, any type of cup is easily put into and taken off from the cup-holder, further that, cups are not turned over due to the features of adjustment and fixing structure, thus the present invention is capable of applying to different sorts of cups.

## BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective and exploded view of a first embodiment of an adjustable cup-holder of the present invention;

Fig.2 is a partial sectional view of the first embodiment of the adjustable cup-holder of the present invention;

Fig. 3 is a partial sectional view of a bottom portion structure of the first embodiment of the adjustable cup-holder of the present invention, showing a state of the bottom portion structure being raised;

Fig. 4 is a section view along a line A-A in Fig. 3, showing a horizontally flexible ring fixing structure of the first embodiment of the adjustable cup-holder of the present invention;

Fig. 5 is a top view of the first embodiment of the adjustable cup-holder of the present invention;

Fig. 5A and Fig. 5B represent another embodiment of a structure fixing an outer side of a cup lower end of the present invention;

Fig. 5C represents a second embodiment of a structure fixing an outer side of a cup lower end of the present invention;

Fig. 6, Fig. 7 and Fig. 8 represent a third embodiment of a structure fixing an outer side of a cup lower end of the present invention;

Fig. 9 represents a fourth embodiment of a structure fixing an outer side of a cup lower end of the present invention;

Fig. 10 is a perspective and exploded view of a second embodiment of the adjustable cup-holder of the present invention;

Fig. 11 is a partial sectional view of the second embodiment of the adjustable cup-holder of the present invention;

Fig. 11A is a partial sectional view of a bottom portion structure of the second embodiment of the adjustable cup-holder of the present invention, showing a state of the bottom portion structure being raised;

Fig. 12 is a perspective and exploded view of a third embodiment of the adjustable cup-holder of the present invention;

Fig. 13 is a partial sectional view of the third embodiment of the adjustable cup-holder of the present invention.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

According to a first embodiment of Fig. 1 to Fig. 8, a lower end of a handle 1 is mounted on a top cover 21 of a bottom 2, an upper end of the handle 1 connects a flexible ring 3. A central portion of the top cover 21 is a cylindrical body 211 protruding downward. The cylindrical body 211 is put into a socket 221 of a chassis 22 of the top cover 21 for moving up and down. A wall of the cylindrical body 211 has two stopping slots 212 (partial stopping slot 212 is viewed in Fig. 1, another stopping slot 212 is blocked by the cylindrical body 21 and therefore cannot be seen), the stopping slots 212 symmetrically cooperate with stopping portions 222 located on an upper portion of the socket 221 of the chassis 22. Thus, the stopping portions 222 can move up and down in the stopping slots 212. While the top cover 21 is raised and the stopping slots 212 is thus moved upward, a lower edge 2121 of the stopping slots 212 touches the stopping portions 222; continuously the top cover 21 is lifted up, the stopping slots 212 hook up the stopping portions 222 to take the chassis 22 off. The stopping slots 212 and the stopping portions 222 function to prevent the disassembling of the top cover 21 and the chassis 22.

A central portion of the cylindrical body 211 of the top cover 21 is a plug 2111 moving up and down, a lower end 21111 of the plug 2111 goes through a hole 21131 of a cylindrical body bottom portion 2113 for stopping an air through hole 223 located on a central portion of the socket 221 of the chassis 22. A flange 224 around the chassis 22 encloses a ring

slot 231 of a sucker 23, therefore the sucker 23 and the chassis 22 are connected and sealed each other. Four small columns 2241 of the flange 224 are inserted into four holes 232 on the sucker 23 for fixing for avoiding that the sucker 23 being taken off.

A spring 21114 is above the plug 2111, and an upper end of the spring 21114 is against a small round cover 21121 of an upper hole 2112 of the cylindrical body 211, a lower end of the spring 21114 is located into a dent 21112 of a central portion of the plug 2111. Therefore, the spring 21114 can push the plug 2111 downward. The diameter of a flange 21113 on the upper end of the plug 2111 is larger than the hole 21131. While the plug 2111 is inserted into the air through hole 223, the sucker 23 can absorb the surface of a table to fix the chassis 22, as shown in Fig. 2. While the top cover 21 is raised until the cylindrical body bottom portion 2113 touches the flange 21113 of the plug 2111, the plug 2111 is pressed by the spring 21114 and then blocks the air through hole 223. The distance for raising the top cover 21 up is a safety design to avoid the air through hole 223 being opened due to a little movement of the sucker 23. Continuously the top cover 21 has being raised, the cylindrical body bottom portion 2113 can then lift the flange 21113 of the plug 2111. Hence the air through hole 223 is opened, air goes into the sucker 23 by way of the air through hole 223, and the sucker 23 is not in vacuum to make the whole cylindrical body bottom portion be lifted very easily.

Due to the handle 1 is aside of the adjustable cup-holder, it may be strong enough, therefore the materials shall be heavy enough as well. The gravity of the cup-holder focuses on the rim of the bottom of the cup-holder. If a cup or a paper cup is not contained in the cup-holder, the cup-holder is easily turned over, therefore a suitable place of the top cover 21 or the bottom 2 under the handle 1, the chassis 22, is extended a

supporting plate 2A for preventing that the cup-holder being turned over. Certainly the supporting plate 2A can be extended from the handle 1 as well. It is can be any figure of the supporting plate 2A, but the preferable one is a semicircle type.

A fixing end 31 of the flexible ring 3 above the handle 1 connects a buckling plate 4 protruding from the upper end of the handle 1. A buckling cam 5 is set on the upper end of the handle 1. An axial hole 51 of the buckling cam 5 cooperates with an axis 11 elongating from the upper end of the handle 1. A free end 32 of the flexible ring 3 is in between the buckling plate 4 and the buckling cam 5. The buckling cam 5 and the axial hole 51 are not concentric, the smaller diameter part of the buckling cam 5 is turned to be close to a portion 33, shown as the active lines in Fig. 4, and the free end 32 is not clamped and moved freely. Hence, the flexible ring 3 is adjustable to suitably tie a cup 6 up. While a stirring rod 53 is poked along the direction of an arrow in Fig. 4, the smaller radius part of the buckling cam 5 is gradually departed from the portion 33; otherwise the larger radius part of the buckling cam 5 is then close to the portion 33, that is, the buckling cam 5 will touch the portion 33, shown as the dot lines in Fig. 4. Please note that the portion 33 of the flexible ring 3 is moved by the buckling cam 5 due to the friction force between the buckling cam 5 and the portion 33 while the portion 33 being gradually tied up in between the buckling cam 5 and the buckling plate 4. Besides, a protruding portion 41 of the buckling plate 4 is set to position the clamped cup 6; further, a guard 42 is under the buckling plate 4 and the axis 11 to prevent the portion 33 falling downward, shown as in Fig. 2.

The flexible ring 3 is not continuous, therefore two ends of the flexible ring 3 may be overlapped each other while the flexible ring 3 surrounding

the cup 6. The diameter of the flexible ring 3 is smaller, the overlap may be longer; the diameter of the flexible ring 3 is larger, the overlap shall then be shorter. The flexible ring 3 can be adjustable to suitably fit the cup 6 and then fastened for fixing the cup 6. There are two aspects for fastening the flexible ring 3; the first is to tie up the front end and the rear end of the flexible ring 3, but not limited to the beginning end and the tail end, otherwise, the positions may be a suitable location around the front end and another suitable location around the rear end; further, there is not only the fastening of the front end and the rear end, but also that the front end is mounted on a bracket and the rear end is mounted on somewhere of the bracket; secondly, it is to fasten the flexible ring 3 and the cup-holder together. Although the present invention discloses that the end of the flexible ring 3 connects the upper end of the handle 1 and another end is an adjustable free end, on the other hand, two ends being free ends shall be another embodiments as well. As aforesaid embodiment, the two free ends are to be clamped in between the buckling plate 4 and the buckling cam 5. A couple of holes are punched on both the free front end and the free rear end, and a stick is through the holes for fixing different types of cups. Such way can be used as belts, braces, etc.

There are many ways to tie the cup-holder and the flexible ring 3 up, that is, a clamping mechanism mounted on a position of the flexible ring 3 is able to connect the flexible ring 3 and the cup-holder; alternatively, using a stick to go through the holes on both the flexible ring 3 and the cup-holder. The flexible ring 3 and the cup-holder are separate, thus they are convenient to clean, but many components may be careful for keeping and using.

Besides, the buckling cam 5 can be rotated by the axis 11 through the axial hole 51 and elongated upward from the handle 1, shown as in Fig. 2.

The structure of the first embodiment is that to draw a dot line M-M for the axis 11, the buckling cam 5, the buckling plate 4 and the flexible ring 3, and the dot line M-M is a mirror, thus the mirror is reflected upward, continuously to decorate the handle 1 shall be done for structure. Otherwise, the buckling cam 5 can be rotated by the axis 11 through the axial hole 51 and elongated horizontally from the handle 1, shown as in Fig. 1. The structure of the second embodiment is that to horizontally put the axis 11 and connect the axis 11 and the end of the handle 1, continuously the buckling cam 5 and the stirring rod 53 are still on the horizontal axis 11, therefore to stir the stirring rod 53 is either to tie the flexible ring 3 up or loose it.

There are some possibilities that the cup is still shaken even if the cup is tied up by the flexible ring 3. Hence, there is a need to settle some fasteners under the lower portion of the cup. The adopted way is to bind the lower portion of the cup by means of the flexible ring 3, and the buckling plate 4 of the flexible ring 3 is suitably set on the bottom portion 2113 or the bottom 2 of the handle 1. Due to the bottom 2 is fastened with the cup, the more convenient, reliable and economical way is to install some fasteners on the bottom 2. Due to that the bottom 2 is under the cup originally, therefore the simple way is to set some fasteners on the bottom 2. The fasteners have a couple of baffles protruding upward to hold the surrounding edge of the bottom 2, and the baffles are divided into two types, one is fixing type, another one is movable type. The fixing type of the baffles are designed as ladder figure for different diameters of cups. The ladders are closer to the center of the bottom 2, the ladders are lower. Such that, smaller cups are located into lower positions of the baffles. No matter what cups are located into lower or upper positions, cups are held tightly. Further, the organized shape of the baffles can be the type of

reverse taper figure. Hence, while the cup is applied by more power into the baffles, the cup is more tied up. The bias angle of the reverse taper figure is closer to  $90^{\circ}$ , the cup is fixed more easily. More, the surface of the baffle can be covered by soft material, and the bottom 2 is hard to move while the bottom 2 being sunk into the soft material. The aforesaid two figures of the baffles may be installed some positions surrounding the bottom 2, preferably a pair of baffles are located on two sides of the handle 1, and they are symmetrical.

The movable type of the baffles are settled on the bottom 2 for holding the cup as well, a movable base is under the baffles, and a couple of tracks are on the bottom 2 for the movable base riding on. The movable base has a temporarily fixing mechanism so as to fix the movable base on the bottom 2 while the movable base moving to a certain position, continuously the baffles are capable of holding the cup.

Please refer to figures, and following will describe the movable type of the baffles first, and then the fixing type of the baffles. In Fig. 5, the movable type of the baffles 2144 are arranged on a pair of line-tooth fasteners 214 and protruding upward thereon, and the baffles 2144 are curved to fit with cups. The top cover 21 has two serrate slots 213 with the line-tooth fasteners 214. Serrate line teeth 2141 of the line-tooth fasteners 214 buckle serrate line teeth 2131 of the serrate slots 213 up. Around a central portion of the line-tooth fastener 214 is an oscillating axis 2142, which diameter is basically equal to the width of the serrate slot 213. To oscillate the two ends of the line-tooth fasteners 214, the center of the oscillating axis 2142 is a support point for the oscillation. A spring piece 2143 of the line-tooth fastener 214 touches the wall of the serrate slot 213, therefore the serrate line teeth 2141 is pushed to match

with the serrate line teeth 2131 by the spring piece 2143. Two sets of the serrate slots 213 and the line-tooth fasteners 214 are laid out symmetrically, shown as Fig. 5, which are two portions, one is upper, the other is lower. The spring piece 2143 of the upper line-tooth fastener 214 spreads to push the serrate line teeth 2141 to the serrate line teeth 2131. The right end of the lower line-tooth fastener 214 is twisted counterclockwise, the spring piece 2143 of the lower line-tooth fastener 214 is in the state of pressure, thus the serrate line teeth 2141 are completely off from the serrate line teeth 2131. Each line-tooth has a bevel edge and a right angle edge (including almost vertical angle). While pushing the line-tooth fastener 214 along a direction of an arrow 2145, the bevel edge 21411 of the serrate line teeth 2141 slips the bevel edge 21311 of the serrate line teeth 2131 and moves forward; while the baffle 2144 is close to the external edge of the lower end of the cup 6 (shown as a dot circle line), and therefore the serrate line teeth 2141 match with the serrate line teeth 2131, and now the right angle edge 21312 of the serrate line tooth 2131 is against the right angle edge 21412 of the serrate line tooth 2141, the line-tooth fastener 214 can not move along the opposite direction of the arrow 2145 so as to the baffle 2144 being capable of claming the cup 6 tightly. On the other hand, for the lower line-tooth fastener 214, to stir the right end of the lower line-tooth fastener 214 along a direction of an arrow 2146 is to let the spring piece 2143 be pressured, the serrate line teeth 2141 take off from the serrate line teeth 2131 continuously. The lower line-tooth fastener 214 is free to move in the slot 213 for bigger cups.

A round upper baffle 2147 and a round lower baffle 2148 are individually set beyond and below the oscillating axis 2142. Both the baffles are wider

the slot 213 for clamping thereon, the lower line-tooth fastener 214 can then moves back and forth in the slot 213, and not loosed as well.

A pair of arc slots 215 are arranged on the top cover 21, and two arc sliding blocks 216 are in the two arc slots 215 respectively, and sliding back and forth therein. Each of the arc sliding blocks 216 extends a stopping plate 2161 upward, and a clamping surface 21611 of the stopping plate 2161 may clamp the cup 6. In Fig. 5B, while the sliding block 216 moves along a direction of an arrow M, the stopping plate 2161 is close to the cup 6 gradually, and continuously the clamping surface 21611 presses on the cup 6. Due to the angle of the arc slot 215 and the tangential of the cup 6 being very small, the pressure from the cup 6 to the stopping plate 2161 as the arrow P in Fig. 5A is to stop the arc sliding block 216 so as to clamping the cup 6 tightly. A stirring plate 2162 is set beside the stopping plate 2161 for pushing the arc sliding block 216. To prevent the arc sliding block 216 being separated, a protruding block 2163 is installed under the arc sliding block 216.

Shown as in Fig. 5A and Fig. 5B, the arc sliding block 216 has two sharp tips 2164 and 2165, and therefore the arc sliding block 216 is defined as a converse clamping block. While a pushing force along the direction of the arrow M is applied, the converse clamping block is then loosed to move. Otherwise, another pushing force opposite to the arrow M or the arc sliding block 216 being applied by a force as the direction of the arrow P in Fig. 5A, the arc sliding block 216 is moved clockwise, and the two sharp tips 2164 and 2165 are respectively against an arc edge g and the wall of the arc slot 215, thus the arc sliding block 216 is affixed in the arc slot 215, and the stopping plate 2161 is capable of blocking the cup 6 off.

In Fig. 6 to Fig. 8, the baffle 28 is applied broadly by changing its configuration, such as an eccentric cam. The top cover 21 has a narrow slot 26 with a sliding block 27, the sliding block 27 has a flange 271 beneath for preventing to take off. A horizontal axis 272 goes through an axial hole 28A of the baffle 28 for the rotation of the baffle 28. The sliding block 27 moves to the outer edge of the cup 6 firstly, and a vertical shaft 281 is changed to be a horizontal shaft secondly, therefore the surface of the baffle 28 presses on the top cover 21 so as to that the top cover 21 being clamped between the baffle 28 and the flange 271. It is then that the sliding block 27 and the baffle 28 with the eccentric cam figure hold the cup 6 firmly. There are four such structures as aforesaid mounted on the top cover 21, alternatively one or two such structures cooperate with other bottom structures described above for grasping the cup 6.

Another embodiment shown as in Fig. 9, the movable base of the baffle 28 is shaped as a cylinder, the slot and the temporarily fixing mechanism are combined to be an arc seam and a rectangular hole; further that, adding a positioning device is the way to hold the cup 6. A round adjustable plate 22 has three symmetrical involute arc seams 221 and a central hole 222. A moving plate 23 under the adjustable plate 22 has three symmetrical radial seams 231 and a central rectangular hole 232. A cam positioning device 233 is established between the moving plate 23 and the handle 1, same as shown in Fig. 7. A T-type bonding block 234 which vertical portion is slightly turned by way of the connection of the axis 235 and the eccentric cam 236. The horizontal portion of the bonding block 234 is through a long hole 24 of the top cover 21 for pressing onto an inner surface of the top cover 21. Three fastening pins 25 through the involute arc seams 221 and the radial seams 231 can be moved therein. A

ring 251 is on each of the fastening pins 25, and a lower portion of the fastening pin 25 is through the involute arc seams 221 and the radial seams 231 to connect a small round plate 252. Due to the ring 251 and the small round plate 252 being larger than the seams, so the pin 25 is not taken apart and the adjustable plate 22 and the moving plate 23 will not be dismantled. To modulate the adjustable plate 22 clockwise, the fastening pins 25 are close to the center of the adjustable plate 22 simultaneously for holding the cup 6; otherwise the fastening pins 25 are off the center for releasing the cup 6. The long hole 24 of the top cover 21 allows the T-type bonding block 234 moving back and forth therein, that is, the moving plate 23 can be moved as well so as to that the centers of the three fastening pins 25 being in proportion to the axial line of the cup 6, hence the cup 6 is held correctly while moving the moving plate 23 and the adjustable plate 22.

Besides, at least one ladder type of fixing block 217 is set on a suitable position of the top cover 21 adjacent to the lower end of the cup 6, and there is only one fixing block 217 shown in Figs. 1, 2, 3 and 5. As a matter of fact, the plurality of fixing blocks 217 can be mounted on a plurality of locations of the top cover 21 around the lower end of the cup 6. A condition of a smaller bottom portion 2113 of the cup lets the cup be inserted deeper, and an inner side surface 2171 of the fixing block 217 then touches the cup; another condition of a larger bottom portion 2113 of the cup makes another inner side surface 2172 of the fixing block 217 touches the cup. Such structure can suitably stop the cup shaking within a smaller scope, and it is an auxiliary for the product due to the simple structure. Further, the organized shape of the fixing block 217 can be the type of reverse taper figure. Hence, while the cup is applied by more power into the fixing block 217, the cup is more tied up. The bias angle

of the reverse taper figure is closer to  $90^{\circ}$ , the cup is fixed more easily. More, the surface of the fixing block 217 can be covered by soft material, and the bottom 2 is hard to move while the bottom 2 being sunk into the soft material. Since the edge of the bottom 2 is similar to be wrap around when the edge being sunk into the soft material.

As shown in Fig. 1, Fig. 2, Fig. 5 and Fig. 5C, the top cover 21 has one left clamping arm 218A and one right clamping arm 218B. An axis 2181 penetrates through an axial hole 218A1 of the left clamping arm 218A and an axial hole 218B1 of the right clamping arm 218B, then going through a hole 21821 of a clamping arm frame 2182. A pin 21822 is through a hole 21823 of the clamping arm frame 2182 and a hole 21811 of the axis 2181. The axis 2181 is affixed on the clamping arm frame 2182. A spherical non-return member 219 connects a L-type non-return arm 2191. A pin 2193 is through a hole 21941 of a U-type non-return arm frame 2194 and a hole 21911 of the non-return arm 2191 so as to that the non-return arm 2191 pivotally connecting the non-return arm frame 2194 for oscillation. The non-return arm frame 2194 is fastened on an upper end of the axis 2181. A left clamping member 218A2 and a right clamping member 218B2 pivotally connect a left clamping arm end 218A4 and a right clamping arm end 218B4 by way of a hinge 218A3 and another hinge 218B3. Therefore two arc surfaces 218A5 and 218B5 can be turned to fit with the figure of the cup. The non-return arm 2191 is lifted up while in use, then the spherical non-return member 219 oscillates toward right. Since two inner side surfaces 218A61 and 218B61 of a left non-return plates 218A6 and a right non-return plates 218B6 connecting the two clamping arms 218A and 218B are bevel surfaces, the distance between the two clamping arms 218A and 218B is longer while the spherical non-return member 219 being closer to right. The two

clamping arms 218A and 218B are then opened, and the two inner side surfaces 218A61 and 218B61 continuously hold the spherical non-return member 219. Meanwhile to put into the cup, the two clamping arms 218A and 218B press toward the cup, constantly the two non-return plates 218A6 and 218B6 are opened and the non-return member 219 falls down by gravity and oscillates toward left, shown as the dot lines in Fig. 2. The non-return plates 218A6 and 218B6 stop opening after the cup is clamped by the two clamping arms 218A and 218B, the non-return member 219 oscillates toward to the inner side surface 218A61 of the non-return plate 218A6 for fastening the cup. Such that, the two clamping arm 218A and 218B cannot be opened in reverse so as to keeping the cup being held tightly. For picking the cup up, to lift the non-return arm 2191 up is the first action, the non-return member 219 moves toward right, therefore the two non-return plates 218A6 and 218B6 are released to open the two clamping arms 218A and 218B. Alternatively, a plurality of springs can be set on two end portions of external sides of the two clamping arms 218A and 218B to replace the spherical non-return member 219.

According to a second preferred embodiment of Fig. 10 to Fig. 11A, the structures of lower portion and the bottom are same as the first preferred embodiment, and it will not be described further. The same and similar parts between the first and the second embodiments are marked same numbers.

As shown in Fig. 10, a free end 32 of a flexible ring 3 has a plurality of rectangular holes 321. The free end 32 can insert into a through hole 43 of a buckling head 4, and a plurality of protrusions may be designed in the through hole 43, the protrusion is as a tooth 431, which can buckle the rectangular holes 321 for the free end 32 being not out of the buckling head 4. Instead, the protrusions as teeth 431 can also be settled on the

flexible ring 3, and the protrusions cooperate with a concave in the buckling head 4. Such design may be possible to approach the example shown in Fig. 10. Two flexible plates 44 of the buckling head 4 are within two side surfaces 13 of a handle head 12 and moving horizontally. An axis 11 penetrates through an axial hole 51 of a buckling cam 5 and connects a hole 11A of a protruding member 11A1 of the handle head 12 so as to connect a buckling cam 5 and the handle head 12. A flange 42 of the axis 11 is to prevent the axis 11 taking off the buckling cam 5. Two inner sides 53 of the buckling cam 5 are shaped as a hook figure respectively. As shown in Fig. 11, clockwise turning the buckling cam 5 may hitch two pin members 443 to pull the buckling head 4 toward left. Two outer sides 52 of the buckling cam 5 are gradually pressed to close to the free end 32 of the flexible ring 3 (the free end 32 has penetrated through the through hole 43, and two opens of the through hole 43 has a free end respectively), the free end 32 is pressed toward right so as to make the rectangular hole 321 be put around the tooth 431 for not losing the flexible ring 3 from the tooth 431. An I-type binder made by elastic steel is in between the buckling head 4 and the handle head 12, a lower portion 2183 of the binder has a left clamping member 218A2 and a right clamping member 218B2 extended from two sides of the lower portion 2183 toward the cup, and two elastic curve surfaces 218A5, 218B5 touch the cup. An upper portion 2183' of the binder has a structure similar to and shorter than the lower portion 2183 (the shorter length is designed for not bothering drinking water), and it will not be described any further hereinafter. The figure of the binder is not limited by I-type and possible to be any other type, such as T-type.

The cup is put into the flexible ring 3 and tied up firmly by stirring the buckling cam 5 while in use. The cup may be shaped as cylinder-type or

with different tapers, an axial central line of the cup may be deflective after the cup is tied up firmly. Hence, a structure for angle adjustment is a need. The solution is to design an arc surface 14 on the handle head 12 and other two arc surfaces 21833 and 45 in between a middle of the binder and an inner surface of the buckling head 4. The I-type binder is able to adjust deflective angles of the cup before tying the cup up. For ensuring the adjusted angle to be stable, a plurality of teeth 141 of the arc surface 14 can buckle a plurality of long holes 21832 up. Otherwise, if the buckling head 4 is power enough, the teeth 141 and the long holes 21832 can be ignored.

A third preferred embodiment is shown as in Fig. 12 and Fig. 13, a lower portion of the handle and a plurality of components on the lower portion may be the same as the second embodiment, so they are not drawn in Fig. 12 and Fig. 13.

A free end 32 of a flexible ring 3 with a round profile is settled a plurality of indentations 321. The free end 32 penetrates through a through hole 43 of a handle head 12. A cylindrical guiding column 46 of a buckling head 4 is capable of going through a guiding hole 15 of the handle head 12. A hook edge 431 of a wedge hook portion 43 of a wedge plate 47 inserts into one of the indentations 321 of the flexible ring 3 and a guiding slot 16 of the handle head 12. A guiding rail is composed of the guiding column 46, the guiding hole 15, the wedge plate 47 and the guiding slot 16, and downward insertion of the buckling head 4 may be with a bias angle toward right, shown as in Fig. 13. The free end 32 going through the through hole 43 is capable of adjusting the flexible ring 3; more, a lower end 4311 of the hook edge 431 through the indentation 321 is to buckle the free end 32 up. Hence the cup is put around by the flexible ring 3. While the wedge plate 47 moving further downward, a compress

edge 471 of the wedge plate 47 moves toward right and presses to the cup gradually. It is then that the wedge plate 47 is as a chock to be within the handle head 12 and the cup for fixing the cup.

While the invention has been described by way of example and in terms of a preferred embodiment, it is to be understood that the invention is not limited thereto. To the contrary, it is intended to cover various modifications and similar arrangements and procedures, and the scope of the appended claims therefore should be accorded the broadest interpretation so as to encompass all such modifications and similar arrangements and procedures.